WHAT IS CLAIMED IS:

1. An apparatus for sensing mass comprising:

a non-piezoelectric layer;

a piezoelectric layer bonded to said non-piezoelectric layer, wherein a length of one of said piezoelectric layer and said non-piezoelectric layer is less than a length of another of said piezoelectric layer and non-piezoelectric layer, wherein a ratio of a thickness of said non-piezoelectric layer to a thickness of said piezoelectric layer is from about 0.1 to about 3.0; and

electrodes located proximate to said piezoelectric layer.

2. The apparatus of claim 1, wherein said non-piezoelectric layer comprises a material selected from the group consisting of ceramics, metals, polymers and composites one or more of ceramics, metals, and polymers.

3. The apparatus of claim 2, wherein said non-piezoelectric layer comprises a material selected from the group consisting of: silicon dioxide, copper, stainless steel, and titanium.

4. The apparatus of claim 1, wherein said piezoelectric layer comprises a piezoelectric material selected from the group consisting of lead zirconate titanate, lead magnesium niobate-lead titanate solid solutions, and strontium lead titanate.

5. The apparatus of claim 1, further comprising a bonding pad.

6. The apparatus of claim 5, wherein said bonding pad is made from a material selected from the group consisting of gold, SiO_2, a material capable of immobilization of a receptor material, and an absorbent material appropriate for use in chemical sensing.

7. The apparatus of claim 1, wherein said non-piezoelectric layer has a length of about 2.5 centimeters to about 0.5 microns.

8. The apparatus of claim 1, wherein said non-piezoelectric layer has a length of about 1.5 centimeters to about 1.0 microns.

9. The apparatus of claim 1, wherein said piezoelectric layer has a length of about 2.5 centimeters to about 0.5 microns.

10. The apparatus of claim 1, wherein said piezoelectric layer has a length of about 1.5 centimeters to about 1.0 microns.

11. The apparatus of claim 1, wherein said electrodes are employed to measure resonance frequency.

12. The apparatus of claim 11, wherein the presence of mass is determined by measurement of a shift in resonance frequency.

13. The apparatus of claim 11, wherein the resonance frequency when sensing mass is from about 1 kHz to about 10 MHz.

14. The apparatus of claim 11, wherein the resonance frequency when sensing mass is from about 50 kHz to about 5 MHz.

15. The apparatus of claim 1, wherein said piezoelectric layer is triangular in shape.

16. The apparatus of claim 1, wherein said piezoelectric layer is round in shape.

17. The apparatus of claim 1, wherein at least one of said piezoelectric layer and said non-piezoelectric layer is tapered.

18. The apparatus of claim 1, wherein a dimension of said non-piezoelectric layer is less than a corresponding dimension of said piezoelectric layer.

19. The apparatus of claim 1, wherein one of said electrodes is located between said non-piezoelectric layer and said piezoelectric layer.

20. The apparatus of claim 1, further comprising a second piezoelectric layer located on a side of said non-piezoelectric layer opposite a side on which said first piezoelectric layer is located.

21. The apparatus of claim 1, wherein the piezoelectric layer thickness ranges from about 250 μm to about 0.5 μm.

22. A method for the detection of mass comprising the steps of:

providing a sensing apparatus comprising;

a non-piezoelectric layer; and

a piezoelectric layer bonded to said non-piezoelectric layer, wherein a length of one of said piezoelectric layer and said non-piezoelectric layer is less than a length of another of said piezoelectric layer and non-piezoelectric layer;;

measuring a resonance frequency of said apparatus; and

comparing said measured resonance frequency to a baseline resonance frequency to determine a frequency shift.

23. The method of claim 22, wherein said apparatus further comprises electrodes located proximate to said piezoelectric layer.

24. The method of claim 22 further comprising the step of: determining the presence of a biological or chemical substance based upon said determined shift in resonance frequency.

25. The method of claim 22, further comprising the step of providing more than one sensing apparatus to form an array.

26. The method of claim 22, wherein said step of measuring resonance frequency measures frequencies of about 1 kHz to about 10 MHz.

27. The method of claim 22, wherein said step of measuring resonance frequency measures frequencies of about 50 kHz to about 5 MHz.

28. The method of claim 22, wherein said non-piezoelectric layer has a length of from about 2.5 centimeters to about 0.5 microns.

29. The method of claim 22, wherein said non-piezoelectric layer has a length of from about 1.5 centimeters to about 1.0 micron.

30. The method of claim 22, wherein said piezoelectric layer has a length of from about 2.5 centimeters to about 0.5 microns.

31. The method of claim 22, wherein said piezoelectric layer has a length of from about 1.5 centimeter to about 1.0 micron.

32. The method of claim 22, wherein said piezoelectric layer comprises at least one material selected from the group consisting of: lead zirconate titanate, lead magnesium niobate-lead titanate solid solutions and strontium lead titanate.

33. The method of claim 22, wherein said step of measuring occurs in a liquid with a viscosity greater than water.

34. The method of claim 22, wherein said step of measuring occurs in a liquid with a viscosity of from about 1 cp. to about 4000 cp.

35. The method of claim 22, further comprising the step of determining a mass of a biological or chemical substance based upon said determined shift in resonance frequency.

36. The method of claim 22, wherein a ratio of a thickness of said non- piezoelectric layer to a thickness of said piezoelectric layer is from about 0.1 to about 3.0.

37. The method of claim 22, wherein a ratio of a thickness of said non-piezoelectric layer to a thickness of said piezoelectric layer is from about 0.2 to about 1.0.

38. The method of claim 22, wherein the piezoelectric layer thickness ranges from about 250 μm to about 0.5 μm.

39. A method for measuring viscosity comprising the steps of:

providing an apparatus comprising;

a non-piezoelectric layer;

a piezoelectric layer bonded to said non-piezoelectric layer, wherein a length of one of said piezoelectric layer and said non-piezoelectric layer is less than a length of another of said piezoelectric layer and said non-piezoelectric layer; and electrodes located proximate to said piezoelectric layer;

placing said apparatus in a liquid;

measuring a resonance frequency of said apparatus;

comparing the measured resonance frequency to a baseline to determine a shift in resonance frequency; and

determining viscosity of said liquid based upon said determined shift in resonance frequency.

40. The method of claim 39, wherein said step of measuring resonance frequency measures frequencies of about 100 Hz to about 1500kHz.

41. The method of claim 39, wherein said step of measuring resonance frequency measures frequencies of about 1100 Hz to about 1000kHz.

42. The method of claim 39, wherein a ratio of a thickness of said non-piezoelectric layer to a thickness of said piezoelectric layer is from about 0.1 to about 3.0.

43. The method of claim 39, wherein a ratio of a thickness of said non-piezoelectric layer to a thickness of said piezoelectric layer is from about 0.2 to about 1.0.

44. The method of claim 39, wherein the piezoelectric layer thickness ranges from about 250 μm to about 0.5 μm.

45. The method of claim 39, wherein one of said electrodes is located between said non-piezoelectric layer and said piezoelectric layer.